

# Notice of Allowability

Application No.

09/525,707

Examiner

David E. England

Applicant(s)

DENNEAU ET AL.

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/17/2004.
2. ☒ The allowed claim(s) is/are 1-9.
3. ☒ The drawings filed on 3/14/2000, 8/13/2003, 3/10/2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**BUN JOO JAROENCHONWATT**  
**PRIMARY EXAMINER**

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### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Frank DeRosa, Reg. No. 43,584 on May 9, 2005.

### IN THE CLAIMS

Please cancel claim 22 without prejudice or disclaimer.

Please amend claims 1 – 5 as follows:

1. (Currently Amended) A method for routing packets on an array of N processors connected in a nearest neighbor configuration, comprising the steps of:

for each end processor of each row and column of the array, connecting an unused output[[s]] of an the end processor to an ~~corresponding~~ unused input[[s]] of the same end processor so as to create a wrapped path at each end processor of the array; and

for each axis required to ~~directly~~ route a packet from a source processor to a destination processor in the array,

determining whether a result of directly sending a packet from an initial processor to a target processor along said axis is less than or greater than N/2 moves along said axis, ~~respectively, the initial processor being the source~~

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~~processor in a first axis, the target processor being the destination processor in a last axis;~~

~~directly sending the packet, when the result is less than  $N/2$  moves,~~  
directly sending the packet from the initial processor to the target processor along said axis without traversing a wrapped path of an end processor of said axis; and  
~~indirectly sending the packet so as to follow at least one of the wrapped paths; when the result is greater than  $N/2$  moves, indirectly sending the packet from the initial processor to the target processor along said axis by traversing a wrapped path of an end processor of said axis. wherein the packet is sent to one of the end processors and routed around the wrapped path of the one end processor to change the direction of the packet's propagation towards the destination processor.~~

2. (Currently Amended) The method according to claim 1, wherein when routing a packet from a source processor to a destination processor requires routing along an x-axis and a y-axis, the packets are first routed along the x-axis, and then the y-axis.

3. (Currently Amended) The method according to claim 1, ~~further comprising the step of randomly sending the packet using either of said sending steps; wherein~~ when the result is equal to  $N/2$  moves and  $N$  is an even number, then either directly or indirectly sending the packet from the initial processor to the target processor along said axis.

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4. (Currently Amended) The method according to claim 1, wherein indirectly sending the packet from the initial processor to the target processor along said axis ~~said indirectly sending step~~ comprises ~~the step of initially~~ sending the packet along said axis from the initial processor in an opposing direction with respect to the target processor, ~~traversing following~~ the wrapped path of a first end processor, proceeding through the array of processors along said axis toward a second end processor, ~~traversing following~~ the wrapped path of the second end processor, and proceeding along said axis to the target processor.

5. (Currently Amended) The method according to claim 1, wherein the step of indirectly sending the packet from the initial processor to the target processor along said axis by traversing a wrapped path of an end processor of said axis comprises further comprising the step of the target processor receiving the packet upon a second pass thereby, when the packet is sent indirectly and the packet follows at least one wrapped path.

### *Reasons for Allowance*

2. The following is an examiner's statement of reasons for allowance: the closest prior art of record (Birrittella et al., U.S. Patent No. 5,737,628) does not teach nor suggest in detail the array of end processors having the end processors of each row and column having wrapped paths that connect an unused output of a end processor to an unused input of the same end processor, being done to every end processor in the array, as argued

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by the Applicant (see Remarks dated 11/17/2004, page 5 and 6; Specification dated 03/14/2000, pages 16 – 21; and Drawings dated 03/10/2004, Figure 4 of Applicant's enabling portions of the specification and drawings). Birrittella only teaches a array of processors that connect unused outputs of end processors to different unused inputs of other end processors, creating a circle or a torus shaped network. Furthermore, Applicant's other enabling portions further state that packets will be routed along an axis in a specific direction depending on whether the moves from an initial processor to a target processor along said axis is less than or greater than  $N/2$  moves along said axis,  $N$  equaling a number of processors. Where if the result is less than  $N/2$  moves, the initial processor will directly send the packet to the target processor along said axis without traversing a wrapped path of an end processor of an axis. Furthermore, if the result is greater than  $N/2$  moves, indirectly sending the packet from the initial processor to the target processor along said axis by traversing a wrapped path of an end processor of said axis, as argued by the Applicant, (Remarks dated 11/17/2004, page 5 and 6; Specification dated 03/14/2000, pages 18 – 21, Amended Specification dated 03/10/2004 page 3 and 4; and Drawings dated 03/10/2004, Figure 4, Drawings dated 03/14/2000, Figures 5 and 6 of Applicant's enabling portions of the specification and drawings). Birrittella only teaches packets traveling in plus or minus directions with no teaching on the direction depending on whether the moves from an initial processor to a target processor along said axis is less than or greater than  $N/2$  moves along said axis,  $N$  equaling a number of processors. So as indicated by the above statements, Applicant's arguments have been considered persuasive, in light of the claim limitations as well as the enabling portions of the specification.

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3. The dependent claims further limit the independent claims and are considered allowable on the same basis as the independent claim as well as for the further limitations set forth. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Claims 1 – 9 are allowed.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 571-272-3912. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

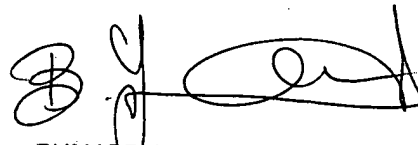
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David E. England  
Examiner  
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De



**BUN JOE JAOENCHONWANIT**  
**PRIMARY EXAMINER**